

Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims

1-21. (canceled)

22. (previously presented) A communication network comprising:

a host network;

a plurality of base stations;

at least a mobile host capable of establishing links to said base stations; and

a hierarchy-network of plural router-sets providing multiple-point routings between said base stations and said host network,

wherein each of said router-sets further includes plural associated routers which provide the same communication route and which have the same routing information, and a normally selected one of said associated routers in each router set is operational to provide said communication route, and if said normally selected one of said associated routers becomes inoperational, then another of said associated routers is selected to be operational to provide said communication route, thereby allowing continuous communication between said at least mobile host and said host network,

wherein selection of one of said associated routers in each router set is made by a selected higher level router which manages said associated routers, and

wherein the normally selected one of said associated routers in each router set sends said selected higher level router a message indicating that said normally selected one of said associated routers is operational, and if said selected higher level router has not received said message from said normally selected one of said associated routers in a predetermined time period, then said selected higher level router judges that said normally selected one of said associated routers has become inoperational, and said selected higher level router selects the another of said associated routers to provide the same communication route.

23-25. (canceled)

26. (original) The communication network as claimed in claim 22, wherein all of said associated routers update the same routing information themselves based on a position recording message of said at least mobile host which has been transferred through a selected lower level router which is managed by selected one of said associated routers, and said selected one of said associated routers further transfers said position recording message to all of higher level associated routers which are capable of managing said associated routers.

27. (previously presented) A method of controlling a communication network that includes a host network; a plurality of base stations; at least a mobile host capable of establishing links to said base stations; and a hierarchy-network of plural router-sets providing multiple-point routings between said base stations and said host network, each of said router-sets further including plural associated routers which provide the same communication route and which have the same routing information, the method comprising the steps of:

normally selecting one of said associated routers in each router set is operational to provide said communication route;

selecting another of said associated routers to be operational to provide said communication route when said normally selected one of said associated routers becomes inoperational, thereby allowing continuous communication between said at least mobile host and said host network,

wherein selection of one of said associated routers in each router set is made by a selected higher level router which manages said associated routers;

sending from the normally selected one of said associated routers in each router set to said selected higher level router a message indicating that said normally selected one of said associated routers is operational;

judging by said selected higher level router that said normally selected one of said associated routers has become inoperational when said selected higher level router has not received said message from said normally selected one of said associated routers in a predetermined time period; and

selecting by said selected higher level router the another of said associated routers to provide the same communication route.

28-30. (canceled)

31. (previously presented) The method as claimed in claim 27, further comprising the steps of all of said associated routers updating the same routing information themselves based on a position recording message of said at least mobile host which has been transferred through a selected lower level router which is managed by selected one of said associated routers, and transferring by said selected one of said associated routers said position recording message to all of higher level associated routers which are capable of managing said associated routers.

32. (previously presented) A hierarchy-router-network of plural router-sets providing multiple-point routings between a plurality of base stations establishing links to at least a mobile host and a host network,

wherein each of said router-sets further includes plural associated routers which provide the same communication route

and which have the same routing information, and a normally selected one of said associated routers in each router set is operational to provide said communication route, and if said normally selected one of said associated routers becomes inoperational, then another of said associated routers is selected to be operational to provide said communication route, thereby allowing continuous communication between said at least mobile host and said host network,

wherein selection of one of said associated routers in each router set is made by a selected higher level router which manages said associated routers,

wherein all of said associated routers update the same routing information themselves based on a position recording message of said at least mobile host which has been transferred through a selected lower level router which is managed by selected one of said associated routers, and said selected one of said associated routers further transfers said position recording message to all of higher level associated routers which are capable of managing said associated routers.

33-34. (canceled)

35. (previously presented) The hierarchy-router-network as claimed in claim 32, wherein the normally selected one of said associated routers in each router set sends said selected higher level router a message indicating that said normally selected one of said associated routers is operational, and if

said selected higher level router has not received said message from said normally selected one of said associated routers in a predetermined time period, then said selected higher level router judges that said normally selected one of said associated routers has become inoperational, and said selected higher level router selects the another of said associated routers to provide the same communication route.

36. (canceled)

37. (currently amended) A communication network comprising:

a host network;
a plurality of base stations;
at least a mobile host capable of establishing links to said base stations; and
a hierarchy-network of plural routers providing multiple-point routings between said base stations and said host network,

wherein at least one of said routers is a multicast router that transfers a packet to not only a first base station that is currently linked to said mobile host but also transfers the packet to at least a second base station that is adjacent to said first base station and not currently linked to said mobile host,

wherein said multicast router adds said packet with a label value which indicates a sequence in transmission of said packet before transferring said packet with said label value,

wherein lowest level routers at the lowest level of said hierarchy-network of plural routers are capable of queuing said packet, and

wherein after said mobile host entered into said adjacent radio area and established a new link to said second base station, then said mobile host sends said second base station said label value which had been last-received from said first base station, and said second base station transfers said label value to said lowest level router, and said lowest level router selects at least one packet from queuing packets by comparing respective label values of said queuing packets with reference to said last label value, and said lowest level router sends said selected at least one packet of said packets to said mobile host through said second base station.

38. (original) The communication network as claimed in claim 37, wherein said router selected as said multicast router is positioned at a branch point of both a currently designated communication route between said host network and said first base station and a currently undesigned adjacent communication route between said host network and said second base station.

39. (original) The communication network as claimed in claim 38, wherein said selection of said multicast router is made by a retrieval to said branch point based on a position recording message from said mobile host and a last-updated routing information stored on a routing table of each of said routers, wherein said routing information is updated based on said position recording message from said mobile host.

40. (original) The communication network as claimed in claim 39, wherein said retrieval to said branch point is made, every when said mobile host moves to an adjacent radio area to said last-existed radio area, based on a new position recording message from said mobile host and a newly-updated routing information.

41. (original) The communication network as claimed in claim 37, wherein said router selected as said multicast router has a lowest level in said hierarchy-network of plural routers and is positioned on a currently designated communication route between said host network and said first base station.

42. (previously presented) A communication network comprising:

a host network;
a plurality of base stations;
at least a mobile host capable of establishing links to said base stations; and

a hierarchy-network of plural routers providing multiple-point routings between said base stations and said host network,

wherein at least one of said routers is a multicast router that transfers a packet to not only a first base station that is currently linked to said mobile host but also transfers the packet to at least a second base station that is adjacent to said first base station and not currently linked to said mobile host,

wherein said router selected as said multicast router has a lowest level in said hierarchy-network of plural routers and is positioned on a currently designated communication route between said host network and said first base station, and

wherein said multicast router transfers said packet to said first base station and also to said second base station through a higher level router which is higher in level of said hierarchy-network of plural routers, provided that said higher level router is positioned at a branch point of both said currently designated communication route between said host network and said first base station and a currently undesigned adjacent communication route between said host network and said second base station.

43. (previously presented) A communication network comprising:

a host network;

a plurality of base stations;
at least a mobile host capable of establishing links to
said base stations; and
a hierarchy-network of plural routers providing multiple-
point routings between said base stations and said host
network,
wherein at least one of said routers is a multicast
router that transfers a packet to not only a first base
station that is currently linked to said mobile host but also
transfers the packet to at least a second base station that is
adjacent to said first base station and not currently linked
to said mobile host,

wherein said second base station is selected to be a base
station which transmits a most intensive radio wave to said
mobile host except for said first base station.

44-46. (canceled)

47. (previously presented) The communication network as
claimed in claim 37, wherein said mobile host compares a just-
received label value of said packet just received from said
second base station to said last-received label value, and if
said just-received label value is identical with said last-
received label value, then said mobile host discards said
packet just received from said second base station.

48. (canceled)

49. (currently amended) ~~The communication network as claimed in claim 48,~~ A communication network comprising:

a host network;

a plurality of base stations;

at least a mobile host capable of establishing links to said base stations; and

a hierarchy-network of plural routers providing multiple-point routings between said base stations and said host network,

wherein at least one of said routers is a multicast router that transfers a packet to not only a first base station that is currently linked to said mobile host but also transfers the packet to at least a second base station that is adjacent to said first base station and not currently linked to said mobile host,

wherein said multicast router adds said packet with a label value which indicates a sequence in transmission of said packet before transferring said packet with said label value,

wherein said second base station queues said packet, and wherein after said mobile host entered into said adjacent radio area and established a new link to said second base station, then said mobile host sends said second base station said label value which had been last-received from said first base station, and said second base station selects at least one packet from queuing packets by comparing respective label

values of said queuing packets with reference to said last label value, and said second base station sends said selected at least one packet to said mobile host.

50. (previously presented) The communication network as claimed in claim 37, wherein said multicast router is a bicast router.

51. (currently amended) A communication network comprising:

a host network;
a plurality of base stations;
at least a mobile host capable of establishing links to said base stations; and
a hierarchy-network of plural routers providing multiple-point routings between said base stations and said host network,

wherein said hierarchy-network of plural routers establishes not only a currently designated communication route between said host network and a first base station that is currently linked to said mobile host but also a currently undesigned adjacent communication route between said host network and a second base station that is adjacent to said first base station and not currently linked to said mobile host,

wherein said hierarchy-network of plural routers transfers a packet not only through said currently designated

communication route to said first base station but also transfers the packet through said currently undesignated adjacent communication route to said second base station, wherein a router positioned at a branch point of both said currently designated communication route and said currently undesignated adjacent communication route is selected to perform as a multicast router, [[and]] wherein said multicast router adds said packet with a label value which indicates a sequence in transmission of said packet before transferring said packet with said label value, wherein said router selected as said multicast router has a lowest level in said hierarchy-network of plural routers and is positioned on a currently designated communication route between said host network and said first base station, and wherein said multicast router transfers said packet to said first base station and also to said second base station through a higher level router which is higher in level of said hierarchy-network of plural routers, provided that said higher level router is positioned at a branch point of both said currently designated communication route between said host network and said first base station and a currently undesignated adjacent communication route between said host network and said second base station.

52. (canceled)

53. (previously presented) The communication network as claimed in claim 51, wherein said selection of said multicast router is made by a retrieval to said branch point based on a position recording message from said mobile host and a last-updated routing information stored on a routing table of each of said routers, wherein said routing information is updated based on said position recording message from said mobile host.

54. (original) The communication network as claimed in claim 53, wherein said retrieval to said branch point is made, every when said mobile host moves to an adjacent radio area to said last-existed radio area, based on a new position recording message from said mobile host and a newly-updated routing information.

55-56. (canceled)

57. (currently amended) A communication network comprising:

a host network;

a plurality of base stations;

at least a mobile host capable of establishing links to said base stations; and

a hierarchy-network of plural routers providing multiple-point routings between said base stations and said host network,

wherein said hierarchy-network of plural routers
establishes not only a currently designated communication
route between said host network and a first base station that
is currently linked to said mobile host but also a currently
undesignated adjacent communication route between said host
network and a second base station that is adjacent to said
first base station and not currently linked to said mobile
host,

wherein said hierarchy-network of plural routers
transfers a packet not only through said currently designated
communication route to said first base station but also
transfers the packet through said currently undesignated
adjacent communication route to said second base station,
wherein a router positioned at a branch point of both
said currently designated communication route and said
currently undesignated adjacent communication route is
selected to perform as a multicast router,

wherein said multicast router adds said packet with a
label value which indicates a sequence in transmission of said
packet before transferring said packet with said label value,
and

~~The communication network as claimed in claim 51,~~ wherein
said second base station is selected to be a base station
which transmits a most intensive radio wave to said mobile
host except for said first base station.

58. (canceled)

59. (previously presented) The communication network as claimed in claim 51, wherein lowest level routers at the lowest level of said hierarchy-network of plural routers are capable of queuing said packet.

60. (original) The communication network as claimed in claim 59, wherein after said mobile host entered into said adjacent radio area and established a new link to said second base station, then said mobile host sends said second base station said label value which had been last-received from said first base station, and said second base station transfers said label value to said lowest level router, and said lowest level router selects at least one packet from queuing packets by comparing respective label values of said queuing packets with reference to said last label value, and said lowest level router sends said selected at least one packet of said packets to said mobile host through said second base station.

61. (previously presented) The communication network as claimed in claim 51, wherein said mobile host compares a just-received label value of said packet just received from said second base station to said last-received label value, and if said just-received label value is identical with said last-received label value, then said mobile host discards said packet just received from said second base station.

62. (previously presented) The communication network as claimed in claim 51, wherein said second base station queues said packet.

63. (original) The communication network as claimed in claim 62, wherein after said mobile host entered into said adjacent radio area and established a new link to said second base station, then said mobile host sends said second base station said label value which had been last-received from said first base station, and said second base station selects at least one packet from queuing packets by comparing respective label values of said queuing packets with reference to said last label value, and said second base station sends said selected at least one packet to said mobile host.

64. (previously presented) The communication network as claimed in claim 51, wherein said multicast router is a bicast router.

65-69. (canceled)

70. (previously presented) A method of controlling a communication network that includes a host network; a plurality of base stations; at least a mobile host capable of establishing links to said base stations; and a hierarchy-network of plural routers providing multiple-point routings between said base stations and said host network, the method comprising the steps of:

transferring by at least one of said routers that is a multicast router a packet to a first base station that is currently linked to said mobile host, wherein said router selected as said multicast router has a lowest level in said hierarchy-network of plural routers and is positioned on a currently designated communication route between said host network and said first base station;

the at least one of said routers also transferring the packet to at least a second base station that is adjacent to said first base station not currently linked to said mobile host; and

wherein the steps of transferring said packet to said first base station and also to said second base station each comprise the step of transferring through a higher level router which is higher in level of said hierarchy-network of plural routers, said higher level router being positioned at a branch point of both said currently designated communication route between said host network and said first base station and a currently undesignated adjacent communication route between said host network and said second base station.

71. (previously presented) A method of controlling a communication network that includes a host network; a plurality of base stations; at least a mobile host capable of establishing links to said base stations; and a hierarchy-network of plural routers providing multiple-point routings

between said base stations and said host network, the method comprising the steps of:

transferring by at least one of said routers that is a multicast router a packet to a first base station that is currently linked to said mobile host;

the at least one of said routers also transferring the packet to at least a second base station that is adjacent to said first base station not currently linked to said mobile host; and.

selecting said second base station to be a base station which transmits a most intensive radio wave to said mobile host except for said first base station.

72-92. (canceled)